

IN THE CLAIMS:

Please CANCEL claim 2 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 1, 3, 8, 13, 15-18 and 20-24, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1. (Currently Amended) A laser oscillation apparatus comprising:

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wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target ~~value, value; and~~

~~wherein said wavelength change means calculates~~ calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount ~~of the wavelength selection element, and changes the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

2. (Cancelled)

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3. (Currently Amended) The apparatus according to claim 2 1, wherein ~~the oscillation history includes~~ said calculation means calculates the drift amount on the basis of at least one of an oscillation wavelength change amount of the laser beam, an oscillation idle time of the laser beam, and an oscillation duty.

sub 1 4. (Original) The apparatus according to Claim 1, wherein thresholds are set for the oscillation wavelength change amount of the laser beam and the oscillation idle time of the laser beam, whether the oscillation wavelength change amount of the laser beam or the oscillation idle time of the laser beam exceeds the threshold is determined, and a wavelength lock signal is output based on a determination result.

A10 cont'd 5. (Original) The apparatus according to claim 4, wherein a shutter is closed when the oscillation wavelength change amount of the laser beam or the oscillation idle time of the laser beam exceeds the threshold.

6. (Original) The apparatus according to claim 1, further comprising wavelength measurement means for measuring the oscillation wavelength of the laser beam.

7. (Original) The apparatus according to claim 6, wherein
the apparatus further comprises internal environment measurement means for measuring an internal environment of said wavelength measurement means, and
said wavelength measurement means is corrected based on the measured internal environment of said wavelength measurement means.

Sub 1 → 8. (Currently Amended) The apparatus according to claim 7, wherein the internal environment of said wavelength measurement means includes at least one of a temperature and an atmospheric pressure.

9. (Original) The apparatus according to claim 6, wherein whether the measured oscillation wavelength of the laser beam falls within a predetermined allowable range is determined, and a wavelength lock signal is output based on a determination result.

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cancel* 10. (Original) The apparatus according to claim 9, wherein output of the laser beam is stopped when the oscillation wavelength of the laser beam does not fall within the predetermined allowable range.

11. (Original) The apparatus according to claim 1, wherein output of the laser beam is not stopped in changing the oscillation wavelength of the laser beam.

12. (Original) The apparatus according to claim 1, wherein no test laser beam is emitted in changing the oscillation wavelength of the laser beam.

13. (Currently Amended) The apparatus according to claim 1, wherein the wavelength selection element includes one of a grating and an etalon.

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14. (Original) The apparatus according to claim 1, wherein the laser beam includes an excimer laser beam.

15. (Currently Amended) An exposure apparatus using a laser oscillation apparatus as a light source, wherein the laser oscillation apparatus comprises:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target ~~value~~, value; and

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~~said wavelength change means calculates~~ calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount ~~of the wavelength selection element, and changes the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

16. (Currently Amended) The apparatus according to claim 15, wherein the oscillation wavelength of the laser beam is changed between an end of exposure in a predetermined exposure region on a substrate to be exposed and a start of exposure in a next exposure region.

17. (Currently Amended) A semiconductor device manufacturing method of manufacturing a semiconductor device by using an exposure apparatus, said method comprising the steps of:

applying a resist to a substrate;

drawing a pattern on the substrate by using the exposure apparatus; and

developing the substrate,

wherein the exposure apparatus uses as a light source a laser oscillation apparatus

having including:

wavelength change means for driving a wavelength selection element and

changing an oscillation wavelength of a laser beam to a target ~~value~~, value; and

~~the wavelength change means calculates~~ calculation means for calculating a

driving amount of the wavelength selection element on the basis of the target value, and a drift

amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element

on the basis of the calculated driving amount ~~of the wavelength selection element, and changes~~

~~the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

18. (Currently Amended) A semiconductor device manufacturing method comprising the steps of:

installing manufacturing apparatuses for performing various processes, including an exposure apparatus, in a semiconductor manufacturing factory; and

manufacturing a semiconductor device by using the manufacturing apparatuses in a plurality of processes,

wherein the exposure apparatus uses as a light source a laser oscillation apparatus
having including:

wavelength change means for driving a wavelength selection element and
changing an oscillation wavelength of a laser beam to a target value, and

~~the wavelength change means calculates~~ calculation means for calculating a
driving amount of the wavelength selection element on the basis of the target value, and a drift
amount of the oscillation wavelength generated immediately after oscillation starts,

A10 cont'd. ~~wherein said wavelength change means drives the wavelength selection element~~
on the basis of the calculated driving amount ~~of the wavelength selection element, and changes~~
~~the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

19. (Original) The method according to claim 18, further comprising the steps of:
connecting the manufacturing apparatuses by a local area network; and
communicating information about at least one of the manufacturing apparatuses
between the local area network and an external network outside the semiconductor
manufacturing factory.

20. (Currently Amended) The method according to claim 19, ~~wherein~~ further comprising
performing one of (i) accessing a database provided by a vendor or user of the exposure
apparatus ~~is accessed~~ via the external network to obtain maintenance information of the
manufacturing apparatus by data communication, ~~or~~ and (ii) performing production management

is performed by data communication between the semiconductor manufacturing factory and another semiconductor factory via the external network.

21. (Currently Amended) A semiconductor manufacturing factory comprising:

manufacturing apparatuses, including an exposure apparatus, for performing
various processes ~~including an exposure apparatus;~~

a local area network for connecting said manufacturing apparatuses; and

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a gateway which allows the local-area network to access an external network
outside the factory,

wherein information about at least one of said manufacturing apparatuses can be
communicated, and

said exposure apparatus uses as a light source a laser oscillation apparatus ~~having~~
including:

wavelength change means for driving a wavelength selection element and
changing an oscillation wavelength of a laser beam to a target value, and

~~said wavelength change means calculates~~ calculation means for calculating a
driving amount of the wavelength selection element on the basis of the target value, and a drift
amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element
on the basis of the calculated driving amount ~~of the wavelength selection element, and changes~~
~~the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

22. (Currently Amended) A maintenance method for an exposure apparatus installed in a semiconductor manufacturing factory, said method comprising the steps of:

causing a vendor or user of the exposure apparatus to provide a maintenance database connected to an external network of the semiconductor manufacturing factory;

authorizing access from the semiconductor manufacturing factory to the maintenance database via the external network; and

transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network;

wherein the exposure apparatus uses as a light source a laser oscillation apparatus having including:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value, and

~~the wavelength change means calculates~~ calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount ~~of the wavelength selection element, and changes the oscillation wavelength of the laser beam to the target value~~ and the calculated drift amount.

23. (Currently Amended) The apparatus according to claim 15, wherein
the exposure apparatus further comprises a display, a network interface, and a
computer network for executing network software, and
maintenance information of the exposure apparatus can be communicated via the
computer network.

24. (Currently Amended) The apparatus according to claim 23, ~~characterized in that~~
Alt. d. cont. wherein the network software is connected to an external network of a factory where the
exposure apparatus is installed, provides on said display a user interface for accessing a
maintenance database provided by a vendor or user of the exposure apparatus, and enables
obtaining information from the database via the external network.
